AMENDMENTS TO THE CLAIMS

In the Claims:

This listing of claims replaces all prior versions, and listings, of claims in the application:

1. (currently amended) A semiconductor imaging system, comprising:

a sensor having one or more receptors to generate digital output for an image, the one or more receptors ~~associated with~~ having a pitch parameter;

an image transfer medium having a diffraction-limited parameter adapted to the pitch parameter such that the diffraction-limited parameter in an object field of view is approximately matched to a projected receptor pitch parameter in the object field of view; and

a semiconductor workstation that analyzes critical dimensions of a semiconductor structure from the image.

2. (original) The system of claim 1, further comprising an excitation source including at least one of about a 248 nm source, about a 193 nm source, about a 157nm source, and about a 90 nm source.

3. (original) The system of claim 2, further comprising a material that acts as a down-converter for the excitation source.

4. (original) The system of claim 1, further comprising an epi-illumination source that is employed to analyze the critical dimensions.

5. (original) The system of claim 2, further comprising a pulsed source that is associated with a component to enable at least one of synchronous and asynchronous capture of the image.

6. (original) The system of claim 1, further comprising a robotic component to facilitate handling of a semiconductor specimen or a mask specimen.

7. (original) The system of claim 1, further comprising an industrial control system to facilitate processing of an image specimen.

8. (original) The system of claim 1, further comprising an application program that performs at least one of a comparative analysis, a correlative analysis, a cause and effect analysis, a learning system analysis, and a parametric analysis to identify or analyze a specimen.

9. (original) The system of claim 1, further comprising a display to present the image to a user, the display including at least one of a computer monitor, a CRT, an LCD display, a TV, an organic light emitting device display (OLED), a semi-conductor image display device, a head-mount display, a flexible display, a monocular display, a binocular display, a projection display, a retinal display, and a Head-Up display.

10. (original) The system of claim 1, the image is transferred across a network for analysis by at least one of a user and a computer.

11. (original) The system of claim 10, the network is at least one of a local area network, an Internet, an Intranet, and a wireless network.

12. (currently amended) A digital microscopic semiconductor imaging system, comprising:

a sensor having a plurality of pixels to generate digital output for an image, each of the pixels having a size;

an image transfer medium having a diffraction-limited spot size in an object plane matched to about a projected pixel size in an object plane; and

a semiconductor workstation for supporting a semiconductor structure.

13. (previously presented) The system of claim 12 further comprising a controller for controlling the semiconductor workstation based on the digital output from the sensor.

14. (previously presented) The system of claim 12 further comprising a computer for receiving the digital output of the image, the computer operative to inspect the image for defects in the semiconductor structure.

15. (previously presented) The system of claim 12, wherein the image transfer medium comprises a multiple lens configuration, the multiple lens configuration comprising a first lens positioned toward the object plane and a second lens positioned toward the sensor, the first lens sized to have a focal length smaller than a focal length of the second lens to provide an apparent reduction in size of the pixels within the image transfer medium.

16. (previously presented) A method of imaging a feature of a semiconductor structure, comprising:

placing a semiconductor structure comprising the feature in an object plane of an image transfer medium having a diffraction-limited spot size in the object plane; and

collecting light from the feature through the image transfer medium on a sensor having a plurality of pixels to generate an output of an image of the feature, each of the pixels having a size in the object plane approximately matched with diffraction-limited spot size in the object plane.

17. (previously presented) The method of claim 16, wherein the feature is at least one selected from the group consisting of a trench, a via, a dual damascene opening, a photoresist, a metal line, a spacer, a metal interconnect, a dielectric material, a gate, a bitline, and a wordline.

18. (previously presented) The method of claim 16, wherein the output of the image of the feature is used to determine at least one of width, length, depth, and proximity to other features of the feature.

19. (previously presented) The method of claim 16 further comprising using real time analysis of the output of the image of the feature to control one or more of forming trenches, forming vias, forming dual damascene openings, developing a photoresist, forming metal lines, forming spacers, forming metal interconnects, depositing a dielectric material, etching a dielectric material, forming gates, forming non-volatile memory cells, forming bitlines, forming wordlines, chemical mechanic processing, forming an implant region, patterning a metal layer, patterning of a dielectric layer, and patterning a polysilicon layer.

20. (previously presented) The method of claim 16 further comprising storing the output of the image of the feature in a memory.